

## Chapter 3 - Phase I Site Assessment and Due Diligence

Site assessment and due diligence provide initial information regarding the feasibility of a brownfields redevelopment project. A site assessment evaluates the health and environmental risks of a site and the due diligence process examines the legal and financial risks. These two assessments help the planner build a conceptual framework of the site, which will develop into the foundation for the next steps in the redevelopment process.

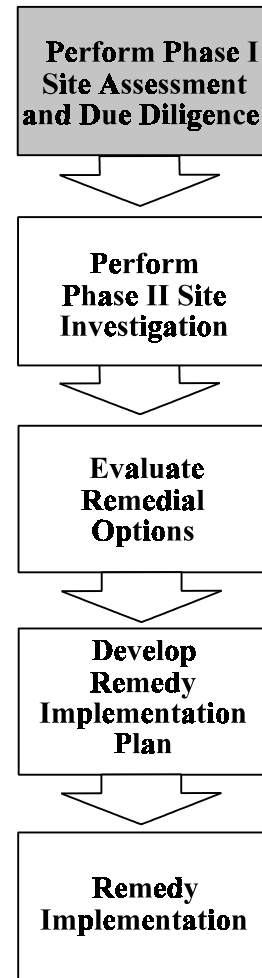
Site assessment and due diligence are necessary to fully address issues regarding the environmental liabilities associated with property ownership. Several federal and state programs exist to minimize owner liability at brownfields sites and facilitate cleanup and redevelopment. Planners and decision-makers should contact their state environmental or regional EPA office for further information.

The Phase I site assessment is generally performed by an environmental professional. Cost for this service depends upon size and location of the site, and is usually around \$2,500. A site assessment typically identifies:

- Potential contaminants that remain in and around a site;
- Likely pathways that the contaminants may move through; and
- Potential risks to the environment and human health that exist along the migration pathways.

Due diligence typically identifies:

- Potential legal and regulatory requirements and risks;
- Preliminary cost estimates for property purchase, engineering, taxation and risk management; and
- Market viability of redevelopment project.



This chapter begins with background information on the role of the EPA and state government in brownfields redevelopment. The remainder of the chapter provides a description of the components of site assessment and the due diligence process.

### Role of EPA and State Government

A brownfields redevelopment project is a partnership between planners and decision-makers (both in the private and public sector), state and

local officials, and the local community. State environmental agencies are often key decision-makers and a primary source of information for brownfields projects. In most cases, planners and decision-makers need to work closely with state program managers to determine their particular state's requirements for brownfields development. Planners may also need to meet additional federal requirements. While state roles in brownfields programs vary widely, key state functions include:

- Overseeing the brownfields site assessment and cleanup process, including the management of voluntary cleanup programs;
- Providing guidance on contaminant screening levels; and
- Serving as a source of site information, as well as legal and technical guidance.

The EPA works closely with state and local governments to develop state Voluntary Cleanup Programs (VCP) to encourage, assist, and expedite brownfields redevelopment. The purpose of a state VCP is to streamline brownfields redevelopment, reduce transaction costs, and provide liability protection for past contamination. Planners and decision-makers should be aware that state cleanup requirements vary significantly; brownfields managers from state agencies should be able to clarify how their state requirements relate to federal requirements.

EPA encourages all states to have their VCPs approved via a Memorandum of Agreement (MOA), whereby EPA transfers control over a brownfields site to that state (Federal Register 97-23831). Under such an arrangement, the EPA does not anticipate becoming involved with private cleanup efforts that are approved by federally recognized state VCPs (unless the agency determines that a given cleanup poses an imminent and substantial threat to public health, welfare or the environment). EPA may, however, provide states with technical assistance to support state VCP efforts.

To receive federal certification, state VCPs must:

- ***Provide for meaningful community involvement.*** This requirement is intended to ensure that the public is informed of and, if interested, involved in brownfields planning. While states have discretion regarding how they provide such opportunities, at a minimum they must notify the public of a proposed contaminant management plan by directly contacting local governments and community groups and publishing or airing legal notices in local media.
- ***Ensure that voluntary response actions protect human health and the environment.*** Examples of ways to determine protectiveness include: conducting site-specific risk assessments to determine background contaminant concentrations; determining maximum contaminant levels for groundwater; and determining the human health risk range for known or suspected carcinogens. Even if the state VCP does not require the state to monitor a site after approving the final voluntary contaminant management plan, the state may still reserve the right to revoke the cleanup certification if there is an unsatisfactory change in the site's use or additional contamination is discovered.
- ***Provide resources needed to ensure that voluntary response actions are conducted in an appropriate and timely manner.*** State VCPs must have adequate financial, legal, and technical resources to ensure that voluntary cleanups meet these goals. Most state VCPs are intended to be self-sustaining. Generally, state VCPs obtain their funding in one of two ways: planners pay an hourly oversight charge to the state environmental agency, in addition to all cleanup costs; or planners pay an application fee that can be applied against oversight costs.
- ***Provide mechanisms for the written approval of voluntary response action plans*** and certify the completion of the response in writing for

submission to the EPA and the voluntary party.

- ***Ensure safe completion of voluntary response actions*** through oversight and enforcement of the cleanup process.
- ***Oversee the completion of the cleanup and long-term site monitoring.*** In the event that the use of the site changes or is found to have additional contamination, states must demonstrate their ability to enforce cleanup efforts via the removal of cleanup certification or other means.

### **Performing A Phase I Site Assessment**

The purpose of a Phase I site assessment is to identify the type, quantity, and extent of potential contamination at a brownfields site. Financial institutions typically require a site assessment prior to lending money to potential property buyers to protect the institution's role as mortgage holder. In addition, parties involved in the transfer, foreclosure, leasing, or marketing of properties recommend some form of site evaluation. A site investigation should include:<sup>1</sup>

- A review of readily available records, such as former site use, building plans, records of any prior contamination events;
- A site visit to observe the areas used for various industrial processes and the condition of the property;
- Interviews with knowledgeable people, such as site owners, operators, and occupants; neighbors; local government officials; and
- A report that includes an assessment of the likelihood that contaminants are present at the site.

A site assessment should be conducted by an environmental professional, and may take three to four weeks to complete. Information on how to review records, conduct site visits and interviews,

and develop a report during a site assessment is provided below.

### **Review Records**

A review of readily available records helps identify likely contaminants and their locations. This review provides a general overview of the brownfields site, likely contaminant pathways, and related health and environmental concerns.

### **Facility Information**

Facility records are often the best source of information on former site activities. If past owners are not initially known, a local records office should have deed books that contain ownership history. Generally, records pertaining specifically to the site in question are adequate for site assessment review purposes. In some cases, however, records of adjacent properties may also need to be reviewed to assess the possibility of contaminants migrating from or to the site, based on geologic or hydrogeologic conditions. If the brownfields property resides in a low-lying area, in close proximity to other industrial facilities or formerly industrialized sites, or downgradient from current or former industrialized sites, an investigation of adjacent properties is warranted.

In addition to facility records, American Society for Testing and Materials (ASTM) Standard 1527 identifies other useful sources of information such as historical aerial photographs, fire insurance maps, property tax files, recorded land title records, topographic maps, local street directories, building department records, zoning/land use records, maps and newspaper archives (ASTM, 1997). Other sources of information might include company patents, shareholder reports, and library archives.

State and federal environmental offices are also potential sources of information. These offices may provide information such as facility maps that identify activities and disposal areas, lists of stored pollutants, and the types and levels of pollutants released. State and federal offices may provide the following types of facility level data:

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<sup>1</sup> The elements of a site assessment presented here are based in part on ASTM Standards 1527 and 1528.

- The state offices responsible for industrial waste management and hazardous waste should have a record of any emergency removal actions at the site (e.g., the removal of leaking drums that posed an "imminent threat" to local residents); any Resource Conservation and Recovery Act (RCRA) permits issued at the site; notices of violations issued; and any environmental investigations.
  - The state office responsible for discharges of wastewater to water bodies under the National Pollutant Discharge Elimination System (NPDES) program will have a record of any permits issued for discharges into surface water at or near the site. The local publicly owned treatment works (POTW) will have records for permits issued for indirect discharges into sewers (e.g., floor drain discharges into sanitary drains).
  - The state office responsible for underground storage tanks may also have records of tanks located at the site, as well as records of any past releases.
  - The state office responsible for air emissions may be able to provide information on potential air pollutants associated with particular types of onsite contamination.
  - EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) of potentially contaminated sites should have a record of any previously reported contamination at or near the site. For information, contact the Superfund Hotline (800-424-9346).
  - EPA Regional Offices can provide records of sites that have released hazardous substances. Information is available from the Federal National Priorities List (NPL); lists of treatment, storage, and disposal (TSD) facilities subject to corrective action under the Resource Conservation and Recovery Act (RCRA); RCRA generators; and the Emergency Response Notification System (ERNS). Contact EPA Regional Offices for more information.
  - State environmental records and local library archives may indicate permit violations or significant contamination releases from or near the site.
  - Residents who were former employees may be able to provide information on waste management practices. These reports should be substantiated.
  - Local fire departments may have responded to emergency events at the facility. Fire departments or city halls may have fire insurance maps<sup>2</sup> or other historical maps or data that indicate the location of hazardous waste storage areas at the site.
  - Local waste haulers may have records of the facility's disposal of hazardous or other wastes.
  - Utility records.
  - Local building permits.
- Requests for federal regulatory information are governed by the Freedom of Information Act (FOIA), and the fulfilling of such requests generally takes a minimum of four to eight weeks. Similar freedom of information legislation does not uniformly exist on the state level; one can expect a minimum waiting period of four weeks to receive requested information (ASTM, 1997).

### ***Identifying Contaminant Migration Pathways***

Offsite migration of contaminants may pose a risk to human health and the environment. A site assessment should gather as much readily available information on the physical characteristics of the site as possible. Migration

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Fire insurance maps show, for a specific property, the locations of such items as UST's, buildings, and areas where chemicals have been used for certain industrial processes.

pathways, such as through soil, groundwater, and air, depend on site-specific characteristics such as geology and the physical characteristics of the individual contaminants (e.g., mobility, solubility, and density). Information on the physical characteristics of the general area can play an important role in identifying potential migration pathways and focusing environmental sampling activities, if needed.

Topographic, soil and subsurface, and groundwater data are particularly important:

*Topographic Data.* Topographic information helps determine whether the site may be subject to contamination from or the source of contamination to adjoining properties. Topographic information will help identify low-lying areas of the facility where rain and snowmelt (and any contaminants in them) may collect and contribute both water and contaminants to the underlying aquifer or surface runoff to nearby areas. The U.S. Geological Survey (USGS) of the Department of the Interior has topographic maps for nearly every part of the country. These maps are inexpensive and available through the following address:

USGS Information Services  
Box 25286  
Denver, CO 80225  
[\[http://www.mapping.usgs.gov/esic/to\\_order.html\]](http://www.mapping.usgs.gov/esic/to_order.html)

Local USGS offices may also have topographic maps.

*Soil and Subsurface Data.* Soil and subsurface soil characteristics determine how contaminants move in the environment. For example, clay soils limit downward movement of pollutants into underlying groundwater but facilitate surface runoff. Sandy soils, on the other hand, can promote rapid infiltration into the water table while inhibiting surface runoff. Soil information can be obtained through a number of sources:

- The Natural Resource Conservation Service and Cooperative Extension Service offices of

the U.S. Department of Agriculture (USDA) are also likely to have soil maps.

- Local planning agencies should have soil maps to support land use planning activities. These maps provide a general description of the soil types present within a county (or sometimes a smaller administrative unit, such as a township).
- Well-water companies are likely to be familiar with local subsurface conditions, and local water districts and state water divisions may have well-logging and water testing information.
- Local health departments may be familiar with subsurface conditions because of their interest in septic drain fields.
- Local construction contractors are likely to be familiar with subsurface conditions from their work with foundations.

Soil characteristics can vary widely within a relatively small area, and it is common to find that the top layer of soil in urban areas is composed of fill materials, not native soils. Geotechnical survey reports are often required by local authorities prior to construction. While the purpose of such surveys is to test soils for compaction, bedrock, and water table, general information gleaned from such reports can support the environmental site assessment process. Though local soil maps and other general soil information can be used for screening purposes such as in a site assessment, site-specific information will be needed in the event that cleanup is necessary.

*Groundwater Data.* Planners should obtain general groundwater information about the site area, including:

- State classifications of underlying aquifers;
- Depth to the groundwater tables;
- Groundwater flow direction and rate;
- Location of nearby drinking water and agricultural wells; and
- Groundwater recharge zones in the vicinity of the site.

This information can be obtained from several local sources, including water authorities, well drilling companies, health departments, and Agricultural Extension and Natural Resource Conservation Service offices.

### ***Identifying Potential Environmental and Human Health Concerns***

Identifying possible environmental and human health risks early in the process can influence decisions regarding the viability of a site for cleanup and the choice of cleanup methods used. A visual inspection of the area will usually suffice to identify onsite or nearby wetlands and water bodies that may be particularly sensitive to releases of contaminants during characterization or cleanup activities. Planners should also review available information from state and local environmental agencies to ascertain the proximity of residential dwellings, industrial/commercial activities, or wetlands/water bodies, and to identify people, animals, or plants that might receive migrating contamination; any particularly sensitive populations in the area (e.g., children; endangered species); and whether any major contamination events have occurred previously in the area (e.g., drinking water problems; groundwater contamination).

Such general environmental information may be obtained by contacting the U.S. Army Corps of Engineers, state environmental agencies, local planning and conservation authorities, the U.S. Geological Survey, and the USDA Natural Resource Conservation Service. State and local agencies and organizations can usually provide information on local fauna and the habitats of any sensitive and/or endangered species.

For human health information, planners can contact:

- *State and local health assessment organizations.* Organizations such as health departments, should have data on the quality of local well water used as a drinking water source as well as any human health risk studies that have been conducted. In addition,

these groups may have other relevant information, such as how certain types of contaminants might pose a health risk during site characterization. Information on exposures to particular contaminants and associated health risks can also be found in health profile documents developed by the Agency for Toxic Substances and Disease Registry (ATSDR). In addition, ATSDR may have conducted a health consultation or health assessment in the area if an environmental contamination event occurred in the past. Such an event and assessment should have been identified in the site assessment records review of prior contamination incidents at the site. For information, contact ATSDR's Division of Toxicology (404-639-6300).

- *Local water and health departments.* During the site visit (described below), when visually inspecting the area around the facility, planners should identify any residential dwellings or commercial activities near the facility and evaluate whether people there may come into contact with contamination along one of the migration pathways. Where groundwater contamination may pose a problem, planners should identify any nearby waterways or aquifers that may be impacted by groundwater discharge of contaminated water, including any drinking water wells downgradient of the site, such as a municipal well field. Local water departments will have a count of well connections to the public water supply. Planners should also pay particular attention to information on private wells in the area downgradient of the facility because they may be vulnerable to contaminants migrating offsite even when the public municipal drinking water supply is not vulnerable. Local health departments often have information on the locations of private wells.

Both groundwater pathways and surface water pathways should be evaluated because contaminants in groundwater can eventually migrate to surface waters and contaminants in surface waters can migrate to groundwater.

### ***Conducting a Site Visit***

In addition to collecting and reviewing available records, a site visit can provide important information about the uses and conditions of the property and identify areas that warrant further investigation (ASTM, 1997). During a visual inspection, the following should be noted:

- Current or past uses of abutting properties that may affect the property being evaluated;
- Evidence of hazardous substances migrating on- or off-site;
- Odors;
- Wells;
- Pits, ponds, or lagoons;
- Surface pools of liquids;
- Drums or storage containers;
- Stained soil or pavements;
- Corrosion;
- Stressed vegetation;
- Solid waste;
- Drains, sewers, sumps, or pathways for off-site migration; and
- Roads, water supplies, and sewage systems.

### ***Conducting Interviews***

Interviewing the site owner, site occupants, and local officials can help identify and clarify the prior and current uses and conditions of the property. They may also provide information on other documents or references regarding the property. Such documents include environmental audit reports, environmental permits, registrations for storage tanks, material safety data sheets, community right-to-know plans, safety plans, government agency notices or correspondence, hazardous waste generator reports or notices, geotechnical studies, or any proceedings involving the property (ASTM, 1997). Personnel from the following local government agencies should be interviewed: the fire department, health agency, and the agency with authority for hazardous waste disposal or other environmental matters. Interviews can be conducted in person, by telephone, or in writing.

ASTM Standard 1528 provides a questionnaire that may be appropriate for use in interviews for

certain sites. ASTM suggests that this questionnaire be posed to the current property owner, any major occupant of the property (or at least 10 percent of the occupants of the property if no major occupant exists), or "any occupant likely to be using, treating, generating, storing, or disposing of hazardous substances or petroleum products on or from the property" (ASTM, 1996). A user's guide accompanies the ASTM questionnaire to assist the investigator in conducting interviews, as well as researching records and making site visits.

### ***Developing a Report***

Toward the end of the site assessment, planners should develop a report that includes all of the important information obtained during record reviews, the site visit, and interviews. Documentation, such as references and important exhibits, should be included, as well as the credentials of the environmental professional who conducted the environmental site assessment. The report should include all information regarding the presence or likely presence of hazardous substances or petroleum products on the property and any conditions that indicate an existing, past, or potential release of such substances into property structures or into the ground, groundwater, or surface water of the property (ASTM, 1997). The report should include the environmental professional's opinion of the impact of the presence or likely presence of any contaminants, and a findings and conclusion section that either indicates that the environmental site assessment revealed no evidence of contaminants in connection with the property, or discusses what evidence of contamination was found (ASTM, 1997).

Additional sections of the report might include a recommendations section for a site investigation, if appropriate. Some states or financial institutions may require information on specific substances such as lead in drinking water or asbestos.

### ***Due Diligence***

The purpose of the due diligence process is to determine the financial viability and extent of

legal risk related to a particular brownfields project. The concept of financial viability can be explored from two perspectives, the marketability of the intended redevelopment use and the accuracy of the financial analysis for redevelopment work. Legal risk is determined through a legal liability analysis.

### ***Market Analysis***

To gain an understanding of the marketability of any given project, it is critical to relate envisioned use(s) of a redeveloped brownfields site to the state and local communities in which it is located. Knowing the role of the projected use of the redevelopment project in the larger picture of economic and social trends helps the planner determine the likelihood of the project's success. For example, many metropolitan areas are adopting a profile of economic activity that parallels the profile of the Detroit area dominated by the auto manufacturing industry. New York, Northern Virginia and Washington, DC, for example, are becoming known as telecommunications hubs (Brownfields Redevelopment: A Guidebook for Local Governments & Communities, International City/County Management Association, 1997). Ohio is asserting itself as a plastics research and development center, and even smaller communities, such as Frederick, Maryland, a growing center for biomedical research and technology are marketing themselves with a specific economic niche in mind.

The benefits of co-locating similar and/or complementary business activities can be seen in business and industrial parks, where collaboration occurs in such areas as facility use, joint business ventures, employee support services such as on-site childcare, waste recycling and disposal, and others. For the brownfields redevelopment planner, this contextual information provides opportunities for creative thinking and direction for collaborative planning related to various possible uses for a particular site and their likelihood of success.

The long-term zoning plan of the jurisdiction in which the brownfields site is located provides an important source of information. Location of existing and planned transportation systems is a key question for any redevelopment activity. Observing the site's proximity to other amenities will flesh out the picture of the attraction potential for any given use.

Assessing the historic characteristics of the site that may influence the project is an important consideration at the neighborhood level. Gaining an understanding of the historic significance of a particular building might lead the community developer toward rehabilitation, rather than new construction on the site. Sensitivity regarding local affinities toward existing structures can go far to win a community's support of a redevelopment project.

Understanding what exists and what is planned provides part of the marketability picture. Particularly for smaller brownfields projects, knowing what is missing from the local community fabric can be an equally important aspect of the market analysis. Whether the "hub" of the area's economic life is light industry or an office complex or a recreational facility, numerous other services are needed to support the fabric of community. Restaurants and delicatessens, for instance, complement many larger, more central attractions, as do many other retail, service and recreational endeavors. A survey of local residents will inform the planner of local needs.

### ***Financial Analysis***

The goal of a financial analysis is to assess the financial risks of the redevelopment project. A Phase I Site Assessment will give the planner some indication of the possible extent of environmental contamination to the site. Financial information continues to unfold with a Phase II Site Investigation. The process of establishing remedial goals and screening remedial alternatives requires an understanding of associated costs. Throughout these processes increasingly specific cost information informs the planner's decision-

making process. The planner's financial analysis should, therefore, serve as an ongoing "conversation" with development plans, providing an informed basis for the planner to determine whether or not to pursue the project. Ultimately the plan for remediation and use should contain as few financial unknowns as possible.

While costs related to the environmental aspects of the project need to be considered throughout the process, other cost information is also critical, including the price of purchase and establishment of legal ownership of the site, planning costs, engineering and architectural costs, hurdling zoning issues, environmental consultation, taxation, infrastructure upgrades, and legal consultation and insurance to help mitigate and manage associated risks.

In a property development initiative, where "time is money," scheduling is a critical factor influencing the financial feasibility of any development project. The timeframe over which to project costs, the expected turnaround time for attaining necessary permit approvals, and the schedule for site assessment, site investigation and actual cleanup of the site, are some aspects of the overall schedule of the project. Throughout the life of the project, the questions of, "how much will it cost," and, "how long will it take," must be tracked as key interacting variables.

Financing brownfields redevelopment projects presents unique difficulties. Many property purchase transactions use the proposed purchase as collateral for financing, depending upon an appraiser's estimate of the property's current and projected value. In the case of a brownfields site, however, a lending institution is likely to hesitate or simply close the door on such an arrangement due to the uncertain value and limited resale potential of the property. Another problem that the developer may face in seeking financing is that banks fear the risk of additional contamination that might be discovered later in the development process, such as an underground plume of groundwater contamination that travels unexpectedly into a neighboring property. Finally,

though recent legislative changes may soften these concerns, many banks fear that their connection with a brownfields project will put them in the "chain of title" and make them potentially liable for cleanup costs (*Brownfields Redevelopment: A Guidebook for Local Governments & Communities*, International City/County Management Association, 1997).

A local appraiser can assist with estimation of property values before and after completion of the project, as well as evaluation of resale potential.

Some of the more notable brownfields redevelopment successes have been financed through consortiums of lenders who agree to spread the risk. Public/private financing partnerships may also be organized to finance brownfields redevelopment through grants, loans, loan guarantees, or bonds. Examples of projects employing unique revenue streams, financing avenues, and tax incentives related to brownfields redevelopment are available in *Lessons from the Field, Unlocking Economic Potential with an Environmental Key* by Edith Perrin, Northeast Midwest Institute, 1997. Certain states, such as New Jersey, have placed a high priority on brownfields redevelopment, and are dedicating significant state funding to support such initiatives. By contacting the appropriate state department of environmental protection, developers can learn about opportunities related to their particular proposal.

### ***Legal Liability Analysis***

The purpose of legal analysis is to minimize the legal liability associated with the redevelopment process. The application and parameters of zoning ordinances, as well as options and limitations on use need to be clear to the developer. The need for a zoning variance and the political climate regarding granting of variances can be generally ascertained through discussions with the local real estate community. Legal counsel can help the developer clarify property ownership, and any legal encumbrances on the property, e.g. rights-of-way, easements. An environmental attorney can also assist the planner/developer to identify

applicable regulatory and permitting requirements, as well as offer general predictions regarding the time frames for attaining these milestones throughout the development process. All of the above legal concerns are relevant to any land purchase.

Understanding tax implications, including deductibility or capitalization of environmental remediation costs, is a feature of legal liability analysis. Also, federal, state or local tax or other financial incentives may be available to support the developer's financing capacity.

Special legal concerns arise from the process of redeveloping a brownfields site. Those concerns include reviewing federal and local environmental requirements to assess not only risks, but ongoing regulatory/permitting requirements. In recent years, several changes have occurred in the law defining liability related to brownfields site contamination and cleanup. New legislation has generally been directed to mitigating the strict assignment of liability established by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or "Superfund"), enacted by Congress in 1980. While CERCLA has had numerous positive effects, it also represents barriers to redeveloping brownfields, most importantly the unknown liability costs related to uncertainty over the extent of contamination present at a site. Several successful CERCLA liability defenses have evolved and the EPA has reformed its administrative policy in support of increased brownfields redevelopment. In addition to legislative attempts to deal with the disincentives created by CERCLA, most states have developed Voluntary Cleanup or similar Programs with liability assurances documented in agreements with the EPA (*Brownfields Redevelopment: A Guidebook for Local Governments & Communities*, International City/County Management Association, 1997).

Another opportunity for risk protection for the developer is environmental insurance. Evaluation of the need and availability of environmental insurance policies that can be streamlined to satisfy a wide range of issues should be part of the analysis of legal liability. Understanding whether historical insurance policies have been retained, as well as the applicability of such policies, is also a dimension of the legal analysis.

## **Conclusion**

If the Phase I site assessment and due diligence adequately informs state and local officials, planners, community representatives, and other stakeholders that no contamination exists at the site, or that contamination is so minimal that it does not pose a health or environmental risk, those involved may decide that adequate site assessment has been accomplished and the process of redevelopment may proceed.

In some cases where evidence of contamination exists, stakeholders may decide that enough information is available from the site assessment and due diligence to characterize the site and determine an appropriate approach for site cleanup of the contamination. In other cases, stakeholders may decide that additional testing is warranted, and a Phase II site investigation should be conducted, as described in the next chapter.